

BRIEF NOTE

Perching Orientation Affects Number of Feeding Attempts and Seed Consumption by the American Goldfinch (*Carduelis tristis*)¹

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ABSTRACT. In the mid 1800s, J. J. Audubon illustrated American Goldfinches (*Carduelis tristis*) feeding upside-down to obtain seed from thistles. The influence of feeding orientation on the number of feeding attempts and seed consumption by the American Goldfinch was investigated in the present study. Six right-side up feeders and six upside-down feeders were filled with thistle seed and put on 1.83 m poles. The number of feeding attempts and seed consumption by goldfinches were recorded. Results from one-way ANOVA tests show that goldfinches attempted to feed right-side up more often and ate greater quantities of thistle while feeding in an upright position. The agility of the American Goldfinch may be one reason that this species will readily feed both right-side up or upside-down. However, for the birdwatcher interested in attracting the American Goldfinch, a feeder where birds eat in an upright position is more effective.

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INTRODUCTION

Feeding birds has become a popular pastime in recent decades (Harrison 1979). Despite its acceptance, we know little about such matters as the proper placement of bird feeders (Dunn and Hussell 1991) and feeder preference.

The American Goldfinch (*Carduelis tristis*) is a favorite visitor of many backyard birdwatchers (Harrison and Harrison 1983). A peculiar behavior of goldfinches is that they feed upside-down to obtain seeds from thistles, as illustrated by J. J. Audubon (Blaugrund and Stebbins 1993), and sunflowers (Horn pers. obs.). In the present study, this feeding strategy was investigated by using a feeder that required birds to feed upside-down. At a normal feeder, the feeding port is above the perch. The goal of this study was to determine how feeding orientation affected the number of feeding attempts and the amount of seed consumption by the American Goldfinch.

MATERIALS AND METHODS

This study was performed between 14 April and 29 May 1993 in a second year old-field at Hiram College's James H. Barrow Field Station in Hiram Township, OH. For the project, six of each of two types of thistle feeders were used: the Fadco Anti-House Finch feeder and the Hyde Distlefink feeder. The Fadco feeder requires birds to feed upside-down to obtain seed; birds perch upright on the Distlefink feeder.

The study area consisted of nine stations in a 30 by 30 m square (Fig. 1). Stations consisted of one or two feeders on at least one 1.83 m Hyde Deck Mounting Post and Arm. Three of nine stations had both types of feeders. Feeders were assigned to a station so that an upside-down feeder would initially be next to a right-side

up feeder. Every sixth day, feeders were rotated in a set pattern to eliminate the possibility of location bias.

Each feeder was filled with a pre-weighed amount of thistle seed. During the sixth day after filling, the remaining portion of thistle was weighed, and the total seed consumption was recorded for each feeder at each station. All of the feeders were then refilled and rotated to the next station.

Thirty-three one-hour periods were spent surveying feeder activity. During each one-hour period, an observation of the nine stations was made every five minutes. During these observations, the following were recorded:

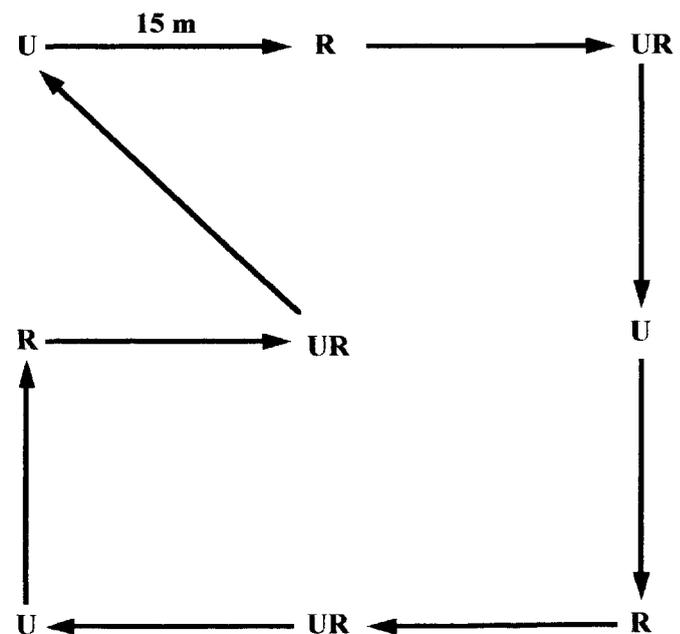


FIGURE 1. Study area used to examine how perching orientation affects the number of feeding attempts and seed consumption by the American Goldfinch. U = upside-down feeder and R = right-side up feeder. All feeders were placed 15 m from each other. Feeder rotation occurred every sixth day following the direction of the arrows.

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1) station number, 2) feeder type(s), and 3) number and species of bird at each feeder.

One-way Analysis of Variance (ANOVA) ($\alpha = 0.05$) was performed to test whether the type of feeder significantly affected either the number of feeding attempts by goldfinches or the amount of seed consumed (Zar 1984).

RESULTS

Four species made 1,376 attempts to feed and consumed 26 kg of thistle during the study. Other than goldfinches, eleven birds of three species used the feeders. House Finches (*Carpodacus mexicanus*) fed upright four times and upside-down once. Black-capped Chickadees (*Parus atricapillus*) fed upside-down four times and upright once. A White-breasted Nuthatch (*Sitta carolinensis*) fed upright once.

Feeder type significantly affected the number of goldfinches that attempted to feed ($P = 0.0001$). Of the 1,365 goldfinches sighted during 396 observations, 951 (69.6%) occurred at the Distlefink feeder. A mean of 4.80 goldfinches per observation was seen on all right-side up feeders combined, whereas the mean for the upside-down feeders was 2.09 (standard errors were 0.351 and 0.187, respectively). Thus, goldfinches used feeders where the feeding port was above the perch more than twice as frequently as feeders with a seed port below the perch.

The type of feeder also significantly affected the amount of seed consumed ($P = 0.0001$). Only 9.2 kg (35%) of the total 26 kg of thistle used during the study was consumed at the Fadco Anti-House Finch feeders. Feeders with seed ports above the perch had a mean six-day consumption of 0.31 kg ($N = 54$, standard error 0.019). Feeders that required birds to eat upside-down had a mean six-day consumption of 0.17 kg ($N = 54$, standard error 0.014). Overall, goldfinches consumed more seed while feeding in an upright position than upside-down.

DISCUSSION

The American Goldfinch is an agile species (Middleton 1993). The agility of the goldfinch may explain the species' willingness to feed upside-down on thistles and sunflowers, and may also be one reason this species will readily come to birdfeeders whether they have to feed right-side up or upside-down. Although the Goldfinch will eat at both types of feeders, results show that feeding right-side up increases the number of feeding

attempts and the amount of seed consumed by goldfinches. Consequently, a feeder where the seed port is above the perch is more attractive than feeders that require goldfinches to feed upside-down.

Although the overall appearance of the Fadco Anti-House Finch feeder and Hyde Distlefinch feeder are similar, the feeders are not identical in their design. Thus, it is possible that goldfinches may be selecting an attribute of the right-side up feeder other than perching orientation.

Backyard birders are not always able to watch the goldfinch because the larger House Finch usually crowds the goldfinch off the perches of conventional feeders (Geis and Pomeroy 1993). Some backyard birders do not like this competition and would like to have a feeder that can only be used by the goldfinch. Because few House Finches were seen at the site ($N = 5$), the ability of an upside-down feeder to inhibit use by the House Finch was not determined. Thus, a study that examines how feeder type affects the number of visits and seed consumption of House Finches is necessary.

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